APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,710	01/09/2002	Joachim Hagenauer	2345/41A	7448

26646	7590	07/07/2004

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EXAMINER
BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 07/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 June 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27 and 30* is/are rejected.

7)☒ Claim(s) *25,26,28 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

1. This office action, in response to the after final amendment filed 6/14/2004, is a non-final office action.

2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Response to Arguments

3. After reviewing the previously cited prior art, it is found that the combination discloses the limitations of claims 27 and 30. These limitations are addressed in the rejections stated below. In addition, a claim objection to claims 25 and 28 are stated below.

Claim Objections

4. Claims 25 and 28 are objected to because of the following informalities: the equation found in line 23 of claim 25 and line 22 of claim 28 needs a ")" after the "x_i" in both the numerator and the denominator. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious

at the time the invention was made to a person having ordinary skill in the art to which said
subject matter pertains. Patentability shall not be negatived by the manner in which the invention
was made.

5.   Claims 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable.

over Hagenauer, "Forward Error Correcting for CDMA Systems", Proceedings of

ISSSTA '95 International Symposium on Spread Spectrum Techniques and

Applications, Mainz, Germany, Vol. 2, September 1996, pp 566-569 in view of the

instant application's disclosed prior art, and further in view of Hagenauer et al, "Iterative

Decoding of Binary Block and Convolutional Codes," IEEE Transactions of Information

Theory, Vol 42, No. 2, March 1996, pp 429-445.

Regarding claims 27 and 30, Hagenauer (Sept 1996) discloses a method of

decoding a received signal by providing a soft-in/soft-out decoder in a receiver where

the soft-in/soft-out decoder comprises an inner and outer decoder (pp 566-567). Figure

3 on page 567 shows the inner decoder outputting a signal to the input of the outer

decoder. This signal comprises L values as stated in the right hand column of page 567

and the L values are soft values. The soft values will be processed as reliability

information, as L values at an output of the inner decoder and the input of the outer

decoder.

Hagenauer (Sept, 1996) does not explicitly disclose which types of codes are

used to decode the received signal even though it is mentioned that Hadamard codes

are used. However, on page 1 of the instant application, Applicants acknowledge

"Transmission systems having an inner code, namely orthogonal modulation using

Walsh functions or rows of Hadamard matrix as code words, and an outer code, for

example a convolution code with interleavers interleave factors are known in decoding

methods. It would have been obvious for one of ordinary skill in the art at the time of the

invention to incorporate well known methods of encoding, which allow the transmission

of signals to decoders, into decoder systems so decoding of well known systems can be

conducted as well as newer encoding systems.

Additionally, Hagenauer (March, 1996), titled "Iterative Decoding of Binary Block

and Convolution Codes" more clearly shows in figure 4 on page 433, the decoder

system explained previously. This reference was cited in Hagenauer (Sept, 1996) and is

a critical element in developing the information shown in the Hagenauer (Sept. 1996)

reference. This citation appears on page 569. Hagenauer (March, 1996) discloses in

heading III. Optimal and Suboptimal Algorithms, a maximum a posteriori decoder (MAP)

is used in which soft information pertaining to the outer code bits are fed back to the first

decoder as shown in figure 4 on page 433. Hagenauer (March, 1996) discloses the

equation used for the implementation of the symbol-by-symbol MAP algorithm as

equation 63 shown on page 438. This equation is the equation recited in the claims.

Contact Information

Any response to this action should be mailed to:

> Commissioner of Patents and Trademarks
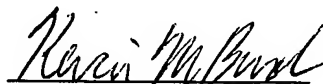> Washington, D.C. 20231

or faxed to:

> (703) 872-9314, (for formal communications intended for entry or
> for informal or draft communications, please label "PROPOSED" or
> "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Burd, whose telephone number is (703) 308-7034. The Examiner can normally be reached on Monday-Thursday from 9:00 AM - 6:00 PM.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Kevin M. Burd
PATENT EXAMINER
7/6/2004